



November 14, 2005

Ms. Debbie Heimberger
Loudoun County Parks and Recreation
215 Depot Court, 3rd Floor
Leesburg, Virginia 20175

RE: Limited Geotechnical Investigation
Proposed Main Water Line Installation
Edgar Tillet Park
Loudoun County, Virginia
TRIAD Project No. 05-05-0088

Dear Ms. Heimberger:

Triad Engineering, Inc. (TRIAD) has completed a limited geotechnical investigation for the main water line at Edgar Tillet Park in Loudoun County, Virginia. This report includes the results of the field exploration and it presents our recommendations related to the geotechnical aspects of the project.

SITE AND PROJECT DESCRIPTION

The site is located on Belmont Ridge Road, approximately five (5) miles south of the Town of Leesburg, in Loudoun County, Virginia. More specifically, Edgar Tillet Park is located at the intersection of Belmont Ridge Road and Truro Parrish Road. The location of the site is shown on Plate A-1 in Appendix A. The main water line proposed to service the park will be located in an easement, 30 feet in width, along the north property line, which turns in a southerly direction between the two (2) northernmost ballfields. Based upon the wooded areas that were cleared for the 30' water line easement, it is believed that the soils are in an undisturbed residual (natural) state. A plan showing the location of the proposed water line easement is presented on Plate A-2 in Appendix A.

FIELD EXPLORATION

The field exploration included drilling nineteen auger probes spaced at 50 feet intervals along the centerline of the proposed water line alignment. The auger probe locations were staked in the field based on information provided by County personnel. Auger probe AP-12 was offset approximately 10 feet to the north due to a bog area encountered. The auger probes were drilled to maximum depths of 5.0 feet or until auger refusal was experienced on bedrock. Standard Penetration Tests (SPT) were not performed as part of this investigation.

Triad Engineering, Inc.

A geotechnical engineer from our office was present full time during the drilling operations to direct the drill crew, log all recovered soil samples, and observe groundwater and rock conditions. Detailed descriptions of materials encountered in the auger probes are presented on the probe logs in Appendix B.

SITE GEOLOGY

According to the Surface Geology Map for Loudoun County, Virginia published by the USGS, the surficial geology at this site consists of Diabase Dikes and Sheets of early Jurassic age and thermally metamorphosed rock of the Balls Bluff Siltstone, Fluvial and Deltaic Sandstone and Siltstone Member of late Triassic age. The sedimentary rock of the Balls Bluff Formation has been thermally metamorphosed from the diabase intrusions. In addition to the diabase rock, the metamorphosed sedimentary rock at this site primarily consists of hornfels, which is hard, brittle, fractured and unweathered. The sedimentary structure of the rock is commonly preserved.

SUBSURFACE CONDITIONS

The materials encountered in the probes are generally described below. Laboratory testing was not performed on the recovered samples, and it should be noted that the soils have been only visually classified. Stratification lines indicated on the probe logs represent the approximate boundaries between material types and the transitions may be gradual.

Topsoil: Topsoil was encountered in all but one (1) of the probes to depths of 5 to 12 inches below the existing ground surface. The topsoil consisted of silt loam with various amounts of sand, organics and roots.

Residual Soils: What appeared to be residual soils were encountered at the existing ground surface or immediately below the topsoil materials in all of the probes. The residual soils consisted of clayey silt and silty clay.

Bedrock: Bedrock consisting of diabase was encountered in nine (9) of the auger probes at depths of 1.5 to 4.0 feet below the existing ground surface. Auger refusal was essentially experienced at the initial contact with the diabase, in the probes where bedrock was encountered. Plate A-2 indicates the depth of bedrock (if encountered) in each probe.

SUMMARY

It is our understanding that the proposed water line will be located approximately 36 inches below existing grades. Deeper excavation will be required for placement of pipe bedding materials, however. Very dense (non-rippable) bedrock consisting of diabase was encountered within five (5) feet of the existing ground surface in nine (9) of the auger probes drilled as part of this investigation.

Based on our findings, it is estimated that non-rippable rock will be encountered throughout approximately 50% of the water line alignment. Mechanical methods of excavation, such as the use of a hoe ram, should suffice for removal of most of the rock encountered. Where rock is encountered at depths of only 1.5 to 2.0 feet below the existing ground surface, it may prove more economical to blast the rock to the depth desired.

LIMITATIONS

This geotechnical engineering report has been prepared by TRIAD for the exclusive use of Loudoun County Parks and Recreation and their design team for specific application to the proposed water line installation project at Edgar Tillet Park in Loudoun County, Virginia. The work on the project has been carried out in accordance with reasonable and acceptable engineering practices. No other warranty, either written or implied, is applicable to this project.

Subsurface conditions may vary from those encountered at the auger probe locations. The probe logs are intended to only represent the conditions at each location when the sampling occurred. Classifications of the recovered soil samples are based on recognized standards. The soils encountered in the probes are generally described on the logs and stratification lines indicated on the logs represent the approximate boundaries between material types and the transitions may be gradual.

The interpretations and recommendations in this report are based solely on the information available at the time this report was prepared. In the event that the location or design of the new structure is altered, the conclusions and recommendations presented herein should not be considered valid unless we have been given the opportunity to review the changes.

Prepared By:

TRIAD ENGINEERING, INC.

